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ABSTRACT

The flight test guide has been prepared to assist the applicant and his instructor in preparing for the private pilot or commercial pilot certificate with a lighter-than-air category and free balloon class rating. It contains information and guidance concerning the pilot operations, procedures, and maneuvers relevant to the flight test: layout and recovery of equipment, rigging, inflation, mooring, hand signals, ground crew duties, flight crew duties, ascents, desents, landings, operation of airborne heater, emergency use of ripcord, terminal velocity descent, and heater malfunctions. A suggested test flight checklist is included. (MS)

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FLIGHT TEST GUIDE

[Part 61 Revised]

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PRIVATE and COMMERCIAL PILOT

Free Balloon....

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DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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FLIGHT TEST GUIDE

[Part 61 Revised]

PRIVATE and COMMERCIAL PILOT

Free Balloon

1973

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE

Preface

Part 61 (revised) of Federal Aviation Regulations, effective November 1, 1973, establishes a new concept of pilot training and certification requirements. To provide a transition to these revised requirements, Part 61 (revised) permits the applicant, for a period of 1 year after the effective date, to meet either the previous requirements or those contained in the revised part. Since the free balloon rating on the Private Pilot Certificate lighter-than-air category is newly authorized under Part 61 (revised), the applicant for that certificate must meet only the new requirements.

This flight test guide, AC 61–62, has been prepared by Flight Standards Service of the Federal Aviation Administration to assist the applicant and his instructor in preparing for the flight test for the Private Pilot or Commercial Pilot Certificate with a lighter-than-air category and free balloon class rating under Part 61 (revised). It contains information and guidance concerning the pilot operations, procedures, and maneuvers relevant to the flight test required for those certificates. A suggested flight test checklist is included for the convenience of those who may find such a checklist useful.

In addition to providing help to the applicant and his instructor, this guide will be useful to FAA Inspectors and designated pilot examiners in the conduct and standardization of flight tests. Persons using this guide in connection with free balloon pilot training and flight tests should also refer to the applicable *Federal Aviation Regulations, Airman's Information Manual*, pertinent advisory circulars, and training publications recommended by the Balloon Federation of America.

Comments regarding this guide may be directed to the Department of Transportation, Federal Aviation Administration, Flight Standards Technical Division, P.O. Box 25082, Oklahoma City, Oklahoma 73125.

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APPLICANT'S FLIGHT TEST CHECKLIST
(Suggested)

APPOINTMENT WITH INSPECTOR

OR EXAMINER: Name _____

Time/Date _____

ACCEPTABLE FREE BALLOON AND REQUIRED BASIC EQUIPMENT

ALL BALLOONS

- ☐ Compass
- ☐ Altimeter
- ☐ Vertical Speed Indicator

HOT AIR BALLOON

- ☐ Fuel Quantity Gauge
- ☐ Envelope Temperature Indicator
- ☐ Aircraft Documents:
  - Airworthiness Certificate
  - Registration Certificate
  - Operating Limitations
- ☐ Aircraft Maintenance Records:
  - Airworthiness Inspections
- ☐ FCC Station License (if radio is used)

PERSONAL EQUIPMENT (Recommended)

- ☐ Current Aeronautical Chart
- ☐ Protective Head Gear
- ☐ Heat-resistant Gloves (Hot Air Balloon)
- ☐ 10'' Crescent Wrench (Hot Air Balloon)
- ☐ Striker-igniter (Hot Air Balloon)

PERSONAL RECORDS

- ☐ Pilot Certificate
- ☐ Medical Statement
- ☐ Signed Recommendation
- ☐ Written Test Results
- ☐ Logbook
- ☐ Notice of Disapproval (if applicable)
- ☐ Approved School Graduation Certificate (if applicable)
- ☐ FCC Radiotelephone Operator Permit (if radio is used)
- ☐ Examiner's Fee (if applicable)

GENERAL INFORMATION

PILOT TRAINING AND CERTIFICATION CONCEPT

Part 61 of the Federal Aviation Regulations has been revised and upgraded to reflect the complexity of the modern aircraft as well as its operating environment. In the past, airman certification requirements could be met by training a student to pass a written test and then to demonstrate his ability to perform predetermined flight training maneuvers during a flight test. Rather than merely duplicating on the flight test the maneuvers used for training, the new training and certification concept requires that the applicant receive instruction in and demonstrate his competency in *all pilot operations* listed in pertinent sections of Part 61 (revised). A pilot operation, as used herein, is a group of related procedures and maneuvers involving skills and knowledge required to safely and efficiently function as a pilot. The specific procedures and maneuvers used to teach the pilot operations are not listed in Part 61 (revised). Instead, the instructor is permitted to select procedures and maneuvers from recognized training publications pertinent to the certificate or rating sought. The

instructor indicates by logbook endorsement that the applicant has demonstrated competency in all the required pilot operations and considers him qualified to pass the flight test. On the flight test, the examiner* selects the procedures and maneuvers to be performed by the applicant to show competency in each required pilot operation.

USE OF THIS GUIDE

The pilot operations in this flight test guide, indicated by Roman numerals, are required by Part 61 (revised)—§ 61.107 for the private pilot and § 61.127 for the commercial pilot. This guide is intended only to outline appropriate pilot operations and the minimum standards for the performance of each procedure or maneuver which will be accepted by the examiner as evidence of the pilot's competency. It is not intended that the applicant be tested on every procedure or maneuver within each pilot operation, but only those considered necessary by the examiner to determine competency in each pilot operation. Procedures and maneuvers listed apply to all free balloons, except where indicated.

When, in the judgment of the examiner, certain demonstrations are impractical, competency may be determined by oral testing.

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* The word "examiner" is used hereafter in this guide to denote either the Federal Aviation Administration Inspector or designated pilot examiner who conducts an official flight test.

This guide contains an ***Objective*** for each required pilot operation. Under each pilot operation, pertinent procedures or maneuvers are listed with ***Descriptions*** and ***Acceptable Performance Guidelines.***

1. The ***Objective*** states briefly the purpose of each pilot operation required on the flight test.

2. The ***Description*** provides information on what may be asked of the applicant regarding the selected procedure or maneuver. The procedures or maneuvers listed have been found most effective in demonstrating the objective of that particular pilot operation.

3. The ***Acceptable Performance Guidelines*** include the factors which will be taken into account by the examiner in deciding whether the applicant has met the objective of the pilot operation. Any procedure or action, or the lack thereof, which requires the intervention of the examiner to maintain safe flight will be disqualifying.

Emphasis will be placed on procedures, knowledge, and maneuvers which are most critical to a safe performance as a balloon pilot. During the entire flight test, evaluation of the applicant's performance will be based primarily on his use of good operating practices and sound judgment in avoiding critical situations. Emphasis will also be placed on

necessary precautions at launch and recovery sites to avoid endangering spectators or damaging property.

The applicant will be expected to know the meaning and significance of the terms important to the balloon pilot, such as:

Equilibrium
Superheat
False lift
Never-exceed envelope temperature
Maximum continuous envelope temperature

If the flight test is taken in a hot air free balloon equipped with an airborne heater or in a hot air free balloon without an airborne heater, the applicant's certificate will contain an endorsement restricting his pilot privileges to the type balloon used for the flight test. Part 61 (revised) outlines the procedures for removal of these restrictions.

GENERAL PROCEDURES FOR FLIGHT TESTS

The ability of an applicant for a private or commercial pilot certificate, or for an aircraft rating on that certificate, to perform the required pilot operations is based on the following:

1. Executing procedures and maneuvers within the aircraft's performance capabilities and limitations, including use of the aircraft's systems.

2. Executing emergency procedures and maneuvers appropriate to the aircraft.

3. Piloting the aircraft with smoothness and accuracy.

4. Exercising judgment.

5. Applying his aeronautical knowledge.

6. Showing that he is the master of the aircraft, with the successful outcome of a procedure or maneuver never seriously in doubt.

If the applicant fails any of the required pilot operations he fails the flight test. The examiner or the applicant may discontinue the test at any time when the failure of a required pilot operation makes the applicant ineligible for the certificate or rating sought. If the test is discontinued, the applicant is entitled to credit for only those entire pilot operations that he has successfully performed.

FLIGHT TEST PREREQUISITES

An applicant for the free balloon pilot flight test is required by revised § 61.39 of the Federal Aviation Regulations to have: (1) passed the appropriate free balloon pilot written test within 24 months before the date he takes the flight test, (2) the applicable instruction and aeronautical experience prescribed for the pilot certificate he seeks, (3) a written statement certifying that he has no known medical defect that makes him unable to fly a free balloon, (4) reached at

least 16 years of age for a private pilot or 18 years of age for a commercial pilot, and (5) a written statement from an appropriately certificated and rated commercial pilot certifying that he has given the applicant flight instruction in preparation for the flight test within 60 days preceding the date of application and finds him competent to pass the test and to have a satisfactory knowledge of the subject areas in which he is shown to be deficient by his FAA airman written test report.

The applicant is required by revised § 61.45 to provide an airworthy balloon for the flight test.

PILOT OPERATIONS

Procedures/Maneuvers

I. RIGGING, INFLATING, AND MOORING

Objective

To determine that the applicant can competently prepare the balloon for flight, determine its airworthiness, and can follow recovery procedures after flight.

Procedures/Maneuvers

A. Layout and Recovery of Equipment

1. Description The applicant may be asked to demonstrate the procedures for the deployment and recovery of the envelope, basket, suspension lines, and burner assembly, if applicable. During these procedures, he should take precautions to prevent damage to equipment and should inspect all equipment for airworthiness. The use of a checklist is recommended.

2. Acceptable Performance Guidelines The applicant shall demonstrate a thorough knowledge of the proper procedures for the layout and recovery of equipment. Failure to follow accepted safety precautions or failure to recognize unairworthy conditions shall be disqualifying.

B. Rigging

1. Description The applicant may be asked to demonstrate the procedures and sequence for assembling and adjusting the balloon components, installation and checking of the instrument package, and the stowage of equipment. The use of a checklist is recommended.

2. Acceptable Performance Guidelines The applicant shall demonstrate a thorough knowledge of the proper procedures for the rigging of equipment. Failure to assure that all components are securely assembled or failure to check the safetying of the deflation device shall be disqualifying.

C. Inflation

1. Description The applicant may be asked to demonstrate the procedures for inflating the balloon to proper buoyancy. He should take proper precautions to avoid fire hazards.

2. Acceptable Performance Guidelines The applicant shall demonstrate a thorough knowledge of the inflation procedures. He shall also be knowledgeable regarding the equipment and gases being used. Any action that creates a hazard to personnel or equipment shall be disqualifying.

D. Mooring

1. Description The applicant may be asked to demonstrate a recommended method

of securing the balloon in position prior to and after flight.

2. *Acceptable Performance Guidelines* The applicant shall demonstrate a thorough knowledge of proper mooring techniques, as appropriate to the balloon being used.

II. GROUND AND FLIGHT CREW BRIEFING

Objective

To determine that the applicant knows the essential duties of the ground and flight crews, and that he can competently explain, supervise, and coordinate their activities.

Procedures/Maneuvers

A. Hand Signals

1. Description The applicant may be asked to demonstrate the standard visual signals used in ballooning.

2. *Acceptable Performance Guidelines* The applicant shall have a thorough knowledge of the signals used for normal and emergency balloon operations.

B. Ground Crew Duties

1. Description The applicant may be asked to select a competent ground crew, brief them on their duties, and supervise and coordinate their activities.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on the basis of the criteria he uses in

ground crew selection and on the accuracy and completeness of his briefing. Failure to competently supervise and coordinate the activities of the crew shall be disqualifying.

C. Flight Crew Duties

1. Description The applicant may be asked to select a competent flight crew, brief them on their duties, and supervise and coordinate their activities.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on the basis of the criteria he uses in flight crew selection and on the accuracy and completeness of his briefing. Failure to competently supervise and coordinate the activities of the crew shall be disqualifying.

III. ASCENTS

Objective

To determine that the applicant can accomplish an ascent to a preselected height and can maintain that height.

Procedures/Maneuvers

A. Ascents

1. Description The applicant may be asked to demonstrate the proper procedures and techniques for a weigh-off, and for an ascent at an acceptable rate to the height specified by the examiner. In addition, he may be asked to explain the techniques and

precautions to be used in various atmospheric and launch-site conditions.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on his knowledge and use of procedures and techniques for accomplishing the weigh-off, ascent, level-off, and maintenance of altitude. Any action that creates a hazard to personnel or equipment shall be disqualifying.

IV. DESCENTS

Objective

To determine that the applicant can accomplish a descent to a preselected height and can maintain that height.

Procedures/Maneuvers

A. Descents

1. Description The applicant may be asked to demonstrate the proper procedures and techniques for a descent at an acceptable rate to the height specified by the examiner.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on his knowledge and use of procedures and techniques for accomplishing the descent, level-off, and maintenance of altitude. Any action that creates a hazard to personnel or equipment shall be disqualifying.

V. LANDINGS

Objective

To determine that the applicant can select a suitable landing site and can safely and competently perform various types of landings.

Procedures/Maneuvers

A. Landings

1. Description The applicant may be asked to select a landing site and demonstrate the proper procedures and techniques for an approach and landing at that site. He may also be asked to demonstrate an aborted landing.

In a gas balloon, he should properly coordinate the use of gas and ballast; he should use all landing devices such as the trail rope and rip panel, as necessary.

In a hot air balloon with an airborne heater, he should demonstrate the proper use of the heater. He should also demonstrate the use of all landing devices such as the trail rope, maneuvering vent, and deflation port, if the balloon is so equipped.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his knowledge and use of procedures, techniques, and all landing devices for accomplishing a safe landing at the selected site. Any action that creates a hazard to personnel or equipment shall be disqualifying.

VI. OPERATION OF AIRBORNE HEATER (Hot Air Balloon)

Objective

To determine that the applicant can start and operate the balloon's airborne heater in a safe and efficient manner both on the ground and in flight.

Procedures/Maneuvers

A. Ground Operation of Heater

1. Description The applicant may be asked to demonstrate the procedures for checking the heater system for fuel quantity, leaks, proper ignition, operation, and adjustments.

2. Acceptable Performance Guidelines The applicant shall be evaluated on his ability to properly perform the necessary ground checks for the heater. Any action that creates a hazard to personnel or equipment shall be disqualifying.

B. Inflight Operation of Heater

1. Description The applicant may be asked to demonstrate the proper inflight heater procedures and techniques for controlling the balloon in ascents, level flight, descents, and landings.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his ability to accurately ascend, maintain level flight, descend, and land, as requested by the examiner.

VII. EMERGENCY OPERATIONS

Objective

To determine that the applicant can react promptly and correctly to emergencies which may occur during flight.

Procedures/Maneuvers

A. Emergency Use of Ripcord

1. Description The applicant may be asked to demonstrate a knowledge of the use of the ripcord in an emergency situation involving obstacles or a high-wind condition.

2. Acceptable Performance Guidelines The applicant shall be evaluated on his knowledge of procedures, his judgment, and his timely use of the ripcord.

B. Terminal Velocity Descent (Hot Air Balloon with Airborne Heater)

1. Description The applicant may be asked to demonstrate that he can recognize a terminal velocity descent, check the descent with the heater, and recover with a minimum loss of altitude.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on the basis of his prompt recognition of the terminal velocity descent and his use of the heater to check the descent. Allowing the envelope temperature to exceed the maximum allowable or never-exceed temperature shall be disqualifying.

C. Heater Malfunctions (Hot Air Balloon with Airborne Heater)

1. Description The applicant may be asked to demonstrate his knowledge of corrective actions for heater malfunctions such as fuel starvation, fuel flow obstructions, loss of pilot light, or jammed regulators.

2. Acceptable Performance Guidelines The applicant shall correctly analyze heater difficulties and take proper action. Failure to have a striker-igniter, or other acceptable means for relighting the heater, aboard the aircraft shall be disqualifying.